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(54) TAKE-UP CYLINDER IN THE FOLDER OF ROTARY PRINTING PRESSES

(71) We, ALBERT - FRANKENTHAL AKTIENGESELLSCHAFT, a German body corporate, of Johann-Klein-Strasse 1, 6710 Frankenthal/Pfalz, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

15 The invention relates to take-up rollers for the folders of a rotary printing machine. Such rollers have one or more series of grippers which pick up the fed-in leading end of a work piece.

20 Take-up rollers of this kind are used for collecting and folding cut work pieces. In order to be able to operate with different length work-pieces, the work-pieces may be fed to adjustable grippers, for example by way of a conveyor system. It is important that the grippers pick up the piece with precision. The pieces should not, therefore, be permitted to lag, and should be gripped firmly. Also, they should not be too far advanced as that can lead to trouble in the folder.

25 It is already known to introduce sensing devices in the folder. Such devices sense, for example the use of photocells, the absence of a sheet and will then stop the machine. For such devices, photocells are usually positioned at the exit from the folder, and so indicate trouble within the folder. Then, however, several pieces will still be in the folder and can cause considerable trouble before the machine comes to a stop.

30 It is an object of the invention to provide means allowing detection of improper or unacceptable gripping close to the time of gripping, and enable provision of a signal for causing such measures as cutting the work-piece and stopping the machine.

35 According to the invention there is provided a take-up roller for the folder of a rotary printing press, having one or more series of grippers for picking up the leading edges of work-pieces, two apertures through a gripper support of the roller being posi-

tioned intermediate grippers associated with that gripper support, the apertures being spaced circumferentially of the roller to correspond with maximum and minimum, respectively, overlaps of the gripper support by the leading edge of the work-piece, the apertures constituting at least part of separate light paths.

40 An associated printing press, such as a rotary press, can then be brought to a standstill before a work piece lags by so much that it can no longer be picked up by the grippers and leads to a stoppage.

45 Preferably, a light source is arranged outside the roller and opposite the apertures which house light guides. This ensures reliable operation even where normal lighting in a printing works is poor.

50 The apertures are preferably formed in holders that permit adjustment in relation to a gripper support rail.

55 Rows of needle points may be used as the grippers for holding the leading end of the work piece. Embodiments of the invention are however, equally applicable to pinch-grip type grippers. If the folder is equipped with a cutting arrangement that is motorised for bodily movement, or an otherwise, particularly automatically, adjustable cutting arrangement, for cutting a web into work pieces, embodiments of the present invention can allow such movement or adjustment, and also alteration of the paper grip, without necessarily cutting the web and stopping the machine.

60 An embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings in which:—

65 Figure 1 shows a cylinder arrangement in a folder of a printing machine,

70 Figures 2 to 4 show a gripper, a gripper support rail and a gripped work piece, and

75 Figure 5 is a plan view of a series of grippers.

80 In Figure 1, a paper web 1 is introduced between a cutting roller 2 and a cooperating grooved roller 3 and is here cut into work-piece lengths. Individual pieces 4 are then

fed in known manner to a take-up or pick-up roller 5, which can be, for example, a collecting roller, and here taken up by grippers 6 mounted relative to a gripper support rail 7.

If any trouble occurs in the folder then the paper supply is interrupted by a cutting device 8 and led by a diverting tongue 9 away from the folder pick-up roller 5. Control of the cutting device is effected using paper-back switches or photocells, which are arranged in the usual way at the exit of the folder.

Two apertures 10 and 11 are provided in the gripper support rail 7 between two of the grippers 6 and these apertures are spaced circumferentially of the roller 5. The second opening 11, as encountered in the direction of travel of a work-piece 4, serves to set a maximum, and the first opening 10 a minimum, overlap of the gripper rail by a workpiece being gripped. Light guides 12 and 13 are arranged in the apertures 10 and 11, respectively, and are optically coupled with photocells that may be located inside or outside the roller 5. Either the light guides themselves or electric leads from photocells, are taken out along the roller axis. Such a system can be applied to one, some, or all of a plurality of gripper support rails.

The light guide 12, which corresponds to aperture 10 sensing minimum incursion of paper into the grippers 6, is required to supply its photocell with a dark condition, and the light guide 13 and its associated photocell operate relative to a light state, circuitry being provided responsive to these two states simultaneously for an acceptable paper grip. Figure 2 shows the aperture 11 covered so that the light guide 13 is dark, when a switch pulse is triggered off for the cutter 8. If the work-piece edge lags, resulting in too small a paper grip as shown in Figure 3, the aperture 10 for the light guide 12 will not be covered so that a light state at the associated photocell causes a switch pulse for cutting the work piece and bringing the machine to a standstill. Figure 4 shows an intermediate, and acceptable, position of the leading end of a work piece, in which the light guide 12 is blocked and the light guide 13 is free.

Unfavourable light conditions frequently

prevail in printing buildings. Embodiments of this invention assure safe working if there is arranged opposite the roller surface and at the gripping position, a light source 14 which, advantageously, is energised immediately after the leading end of a work piece is engaged by the gripper, so that a switch pulse indicating unacceptable gripping will be triggered as early as possible.

The apertures 10, 11 for the light guides 12, 13 extend through component parts 15, 16 of the gripper support rail. These parts allow, by loosening of a screw 17, circumferential displacement for adjustment of the desired paper grip.

It will be apparent that lights could be mounted in recesses or apertures on the cylinder and the photocells disposed outside the take-up roller.

WHAT WE CLAIM IS:—

1. A take-up roller for the folder of a rotary printing press having one or more series of grippers for picking up the leading edges of work-pieces, two apertures through a gripper support of the roller being positioned intermediate grippers associated with that gripper support, the apertures being spaced circumferentially of the roller to correspond with maximum and minimum, respectively, overlaps of the gripper support by the leading edge of the work-piece, the apertures constituting at least part of separate light paths.

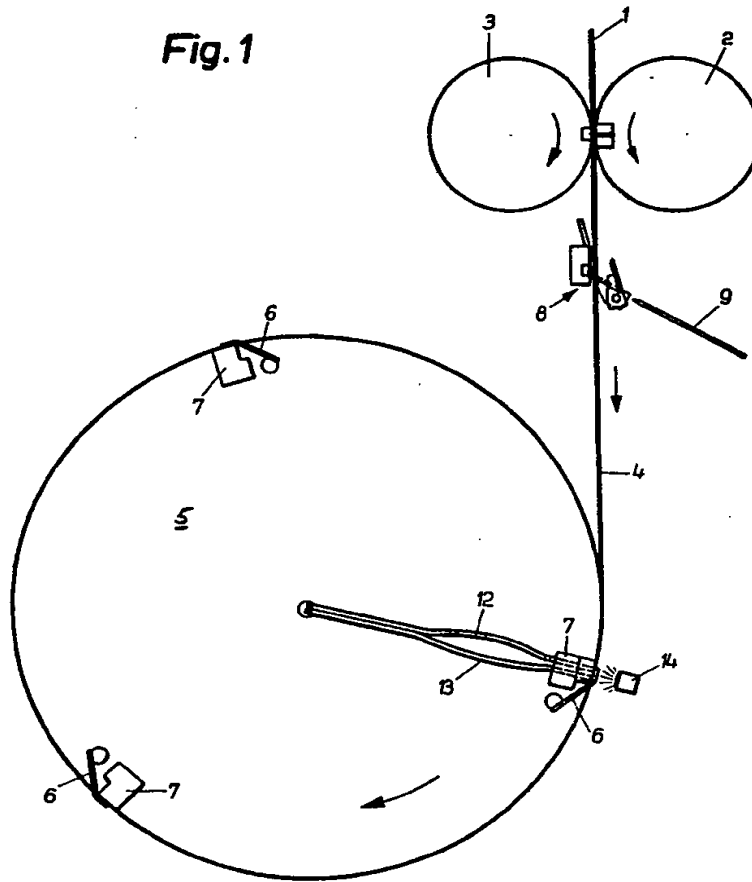
2. A take-up roller according to Claim 1, in which the apertures house light guides and a light source is arranged opposite the apertures and outside the roller.

3. A take-up roller according to Claim 1 or Claim 2, in which the apertures are formed in holders which permit adjustment relative to a gripper support rail.

4. A take-up roller arranged and adapted to operate substantially as herein described with reference to and shown in the accompanying drawings.

5. A folder of a rotary printing press having a take-up roller according to any one of the preceding claims.

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Fig. 1

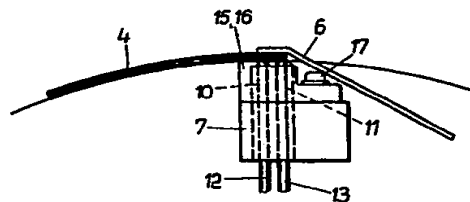


Fig. 2

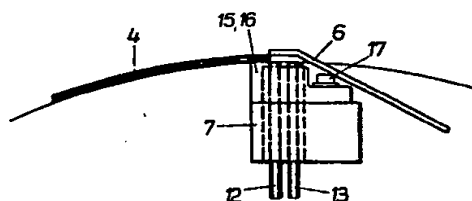


Fig. 3

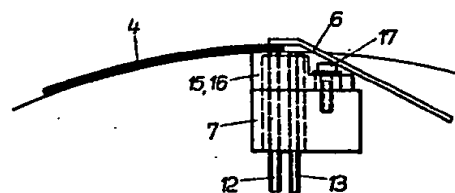


Fig. 4

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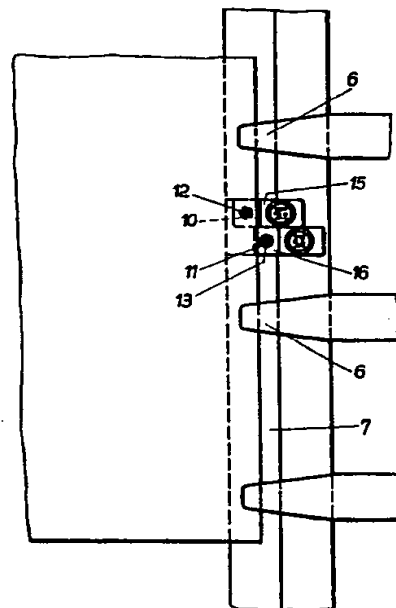
COMPLETE SPECIFICATION

3 SHEETS

*This drawing is a reproduction of
the Original on a reduced scale*

Sheet 3

Fig. 5



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